DOCUMENT RESUME

ED 302 320 PS 017 602

AUTHOR Thorstad, G.
TITLE Transferrability of the Plan Test to Children in Italy and Its Developmental Implications.
PUB DATE Sep 88
NOTE 53p.; Paper presented at the Annual Conference of the British Psychological Society (1988).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Cognitive Development; Cross Cultural Studies; Elementary Education; *Elementary School Students; Foreign Countries; *Freehand Drawing; *House Plan; Scoring; *Test Validity
IDENTIFIERS Developmental Patterns; *England; *Italy

ABSTRACT

In England, a 40-item test of a child's ability to draw the ground floor layout of his or her home was developed. Findings of initial analyses indicated that subjects' drawings improved between the ages of 6 and 12 years. In order to test the cross-cultural validity of the standardization of the test and to see if the order of concept development found among English children would be replicated in Italy, the measure was administered among matched samples of children in northern Italy and England. Participants were 99 English and 72 Italian children between 6 and approximately 11 years of age who attended small, rural schools. Mean scores and the sequence of concept development of Italian and English children were similar. Results confirmed earlier findings that children first draw pictures of houses, then vertical sections. Children next use projective views and finally draw horizontal sections of rooms, doors, and windows, in that order. These developmental changes seem to be achieved through decentration, which allows the conflict of front and back viewpoints to be resolved by taking a viewpoint at 90 degrees to the ground over each room individually. The viewpoint is later extended systematically in a horizontal plane over all the plan. Related materials, including illustrations of children's drawings and the test's scoring system, are appended. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED302320

PAPER ACCEPTED BY THE DEVELOPMENTAL PSYCHOLOGY SECTION

OF THE BRITISH PSYCHOLOGICAL SOCIETY FOR THE

ANNUAL CONFERENCE 1988

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

TRANSFERRABILITY OF THE PLAN TEST TO CHILDREN IN ITALY AND ITS DEVELOPMENTAL IMPLICATIONS

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M.G. Thorstad

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

G. THORSTAD

The Tavistock Clinic

Child and Family Department

Tavistock Centre

120 Belsize Lane

London NW3 5BA

U. K.

PS 017302

BEST COPY AVAILABLE

TRANSFERRABILITY OF THE PLAN TEST AND ITS DEVELOPMENTAL IMPLICATIONS.

ABSTRACT

A test of drawing a plan of a house constructed in England, which shows an improvement in children between the ages of 6 and 12 years, was given to children in northern Italy to ascertain if the standardisation was valid there and if the order of concept development, as revealed by the items, was the same. The test scores were found to be transferrable and the sequence of concept development similar. This confirms earlier findings that children first draw pictures of houses, then vertical sections. Next they use projective views and finally draw horizontal sections of rooms, doors and windows in that order. These developmental changes seem to be achieved through decentration, which allows the conflict of front and back viewpoints to be resolved by taking a viewpoint at 90° to the ground over each room individually and later extended systematically in a horizontal plane over all the plan.

TRANSFERRABILITY OF THE PLAN TEST AND ITS DEVELOPMENTAL IMPLICATIONS

This is a test of children's ability to draw a plan of the house in which they live (Thorstad, 1974). They are required to express three dimensional information on two dimensional paper about an object which is larger than themselves and which can never be seen in its entirety.

The instructions are:

I want you to draw a plan of your house. I only want the ground floor. Imagine that you are a bird looking straight down on top of it. Imagine that you have taken away the roof and the bedrooms, so that you can see the ground floor. I want you to show me where the kitchen is, the hall, the stairs, the dining room, the sitting room. Show me where the doors and windows are.

The 40 items in the test (Appendix A) were selected from the protocols of 1,250 children aged from 6 to 15 years, because they all showed an increase with age in the percentage of children scoring on them. The test was then standardised on a further 1,894 children.

The order in which 50 per cent of children passed each item was then found. It revealed that children were 8 years old before they drew rooms horizontally and that horizontality of the thinner parallelepipeds of doors and windows followed later. Proportions were not represented until 10.8 years and unaccounted for space was still present in 50 per cent of the plans at 11 years (Table 1).

When the test was used in small studies in southern England, the means were always about 100, thus validating the standardisation in this country. However, the question arises as to how far it is transferrable to other countries.

When the test was given to a sample of children in northern Italy, it was anticipated that in comparison to English children that:

1). There would be no statistically significant difference in mean scores.

2). The same cognitive developmental sequence would appear in the items.

METHOD

English and Italian children attending small, country schools were matched in age, ability annd socio-economic groups. There were 99 English children, and 72 Italian children, aged from 6 to 11 years 4 months. General ability was assessed in children over 7 years by the NFER Non Verbal test. As the Italian houses did not have stairs, the possible 6 points were not included.

RESULTS

1). There was no statistically significant difference in their mean ages, or in the Plan test means, although the English children scored significantly higher on the non-verbal test (Table 2).

As developmental changes were important significant differences were looked for at each age level (Table 3). One was found in the 8-year-olds, because the Italian children were slower than English children in drawing the rooms horizontally, but there was no difference in the other age groups.

2). To see if the concepts developed in the same sequence in the two groups, graphs were drawn of the percentage number of successes of each item in each age group. The original English standardisation sample from 6 to 11 years of 954 children was used as a reference. All graphs of all three groups followed the same trends (Appendix B).

The age level at which each item was passed by 50 per cent of children was then found (Table 4). When Kendall's tau allowing for ties was used to assess the similarity in the order of the items the correlations were all high (Table 5). These results show that the order in which the Italian children attain these concepts is essentially the same as in English children.

At 6 years children do not understand the term 'plan', but appear to respond to the word 'house' in the instructions and draw a picture of a house with a roof and chimney (Figures 1a & b).

At 7 years children start to decompose the house vertically according to the instructions, leaving out of the roof, the chimney and the upstairs. They then begin to draw a vertical section of the inside. They more often draw perspectives of the interior showing part of the floor and often giving some indication of depth (Brown, 1969). There is an attempt to conserve topological relationships of proximity and sequence (Figures 2a & b).

At 8 years children begin to notice that the drawing of a perspective view of the interior of the house from the front would not be the same as the view from the back. This leads to taking a view point at 90° over each room and drawing it horizontally. However,

the view points are still mixed for the doors and windows are drawn like pictures, vertically. There is also unaccounted for space for the walls of rooms are not understood as being common to each other (Figures 3a & 7b).

At 9 years children begin to draw symbols for doors and windows. By 10 years they are representing doors and windows as horizontal sections. The outer wall is consistent with the inner rooms. Proportions of rooms begin to be acknowledged (Figures 4a & b).

DISCUSSION

The fact that the Italian children gain the same mean scores as the English children indicates that this test which has been standardised in England is transferrable to northern Italy.

More importantly, the appearance of the same sequence of developmetal stages in both countries reveals that they are of psychological significance.

It would seem that the progress from a global space, limited by concrete experience, towards an articulated space of deducible transformations is achieved by reversible operations (Piaget & Inhelder, 1956; Piaget 1969) and increasing field independence (Witkin & Goodenough, 1981).

REFERENCES

Brown, L.B. (1949). The 3D reconstruction of 2D visual display. Journal of Genetic Psychology, 115 257-262.

Piaget, J (1969). The mechanisms of perception. London: Routledge and Kegan Paul.

Piaget, J. & Inhelder, B. (1956). The child's conception of space. London: Routledge & Kegan Paul.

Witkin, H.A. & Goodenough, D.R. (1981). Cognitive styles: Essence and origins. New York: International Universities Press, Inc.

Thorstad, GG. (1974). The construction of the Plan on a House test and an investigation into some of its developmental and clinical implications Unpublished doctoral dissertation, University of London, Royal Holloway and New Bedford College and Tavistock Clinic, London.

TABLE 1. Ages at which 50% of children pass each item in a sample aged 6 to 15 years.

	ITEM	AGES IN YEARS Boys	Girls	Both
1	Roof absent	6.9	6.9	6.9
2	Chimney "	6.9	6.9	6.9
3	Upstairs "	7.0	7.0	7.0
4	Plan of outside wall absent	6.9	6.9	6.9
5	Floor indicated	7.7	7.6	7.7
6	Depth "	7.8	7.5	7.7
7	Rooms horizontal	8.0	8.1	8.1
8	All rooms connected	8.3	8.7	8.6
9	All walls common	8.6	9.2	8.7
10	Outer wall I	8.5	9.2	8.7
11	Outer wall II	9.0	11.0	9.9
12	Rooms : Proportion	11.0	11.0	11.0
13	Hall I	8.8	10.2	9.2
14	Hall II	9.1	12.0	10.8
15	Hall : Proprortion	12.0	13.2	12.9
16	Horizontal stairs	8.8	9.2	9.1
17	Staircase I	9.2	13.6	11.0
18	" II	10.8	13.8	13.4
19	Staircase Proportion	12.5	13.8	13.2
20	Treads I	9.2	12.4	11.2
21	" II	14.5	-	14.8
22	Doors : Number I	8.3	9.0	8.7
23	" " II	9.2	10.8	10.7
24	" Type I	9.0	10.6	9.5
25	" " II	9.2	13.0	10.9
26	" " III	13.1	15.0	13.2
27	Doors : Proportion	13.6	-	-
28	Windows: Number I	8.8	9.4	8.9
29	" " II	9.3	10.3	10.2
30	" Type I	9.2	11.6	9.8
31	" " II	10.9	13.0	11.1
32	" " III	13.1	13.2	13.1
33	No unaccounted for space	10.8	12.9	11.0
34	No vertical walls	8.8	8.8	8.8
35	Proportion : Number correct I	10.8	10.8	10.8
36	" " " II	12.0	13.0	12.7
37	" " " III	13.8	-	-
38	" " " IV	13.8	-	-
39	Quality of drawing I	9.4	10.8	10.5
40	" " II	13.4	13.8	12.5

TABLE 2. Comparison of scores from English and Italian children aged from 6 to 11 years 4 mths.

	English			Italian				
	N	Mean	SD	N	Mean	SD	t	P
Age	99	9yrs 1.0mths	18.69	72	9yrs 2.9mths	19.62	0.756	NS
Non-verbal	82	118.52	13.29	57	108.26	14.38	4.52	<0.001
Plan	99	14.52	9.09	72	13.00	9.27	1.28	NS

TABLE 3 Differences in Plan scores minus those for stairs at each age level.

6-6:11	13	3.92	7.41	11	4.64	2.50	0.305	NS
7-7:11	16	5.81	4.18	11	4.45	0.93	1.064	NS
8-8:11	13	12.23	8.17	7	4.86	0.90	2.353	P-0.05
9-9:11	22	16.09	5.87	9	14.78	9.04	0.481	NS
10-10:11	25	21.48	4.58	27	20.15	7.10	0.807	NS
11-11:4	10	22.80	3.39	7	17.86	8.65	1.652	NS

TABLE 4. Ages at which 50% of children pass each item.

	ITEM	AGE IN YEARS		
		English Standardisation sample	English matched sample	Italian matched sample
1	Roof absent	6.0	7.0	6.6
2	Chimney "	6.0	6.6	6.0
3	Upstairs "	6.0	6.8	6.0
4	Plan of outside wall absent	6.0	6.6	6.8
5	Floor indicated	7.5	7.2	8.8
6	Depth "	7.7	7.2	8.2
7	Rooms horizontal	8.2	8.6	9.2
8	All rooms connected	8.4	8.6	9.4
9	All walls common	8.8	8.6	9.8
10	Outer wall I	8.8	8.6	9.4
11	Outer Wall II	10.0	9.4	11.2
12	Rooms : Proportion	NYA	11.0	10.4
13	Hall I	9.2	9.2	9.8
14	Hall II	10.8	10.3	10.5
15	Hall : Proportions	NYA	11.5	NYA
16	Horizontal stairs	9.2	10.6	NP
17	Staircase I	11.3	NYA	NP
18	" II	NYA	NYA	NP
19	Staircase Proprtion	NYA	NYA	NP
20	Treads I	NYA	NYA	NP
21	" II	NYA	NYA	NP
22	Doors : Number I	8.5	8.5	9.4
23	" " II	10.6	10.6	10.6
24	" : Type I	9.4	9.4	9.8
25	" " II	10.9	11.0	NYA
26	" " III	NYA	NYA	NYA
27	Doors : Proportion	NYA	NYA	NYA
28	Windows : Number I	9.1	8.6	9.4
29	" " II	10.1	9.6	9.9
30	" Type I	10.6	9.5	9.9
31	" " II	11.3	11.5	NYA
32	" " III	NYA	NYA	NYA
33	No unacconted for space	11.2	10.2	NYA
34	No vertical walls	9.1	8.7	9.7
35	Proportion : Number correct I	10.8	10.4	10.4
36	" " " II	NYA	NYA	NYA
37	" " " III	NYA	NYA	NYA
38	" " " IV	NYA	NYA	NYA
39	Quality of drawing I	10.6	9.8	10.1
40	" " II	NYA	NYA	NYA

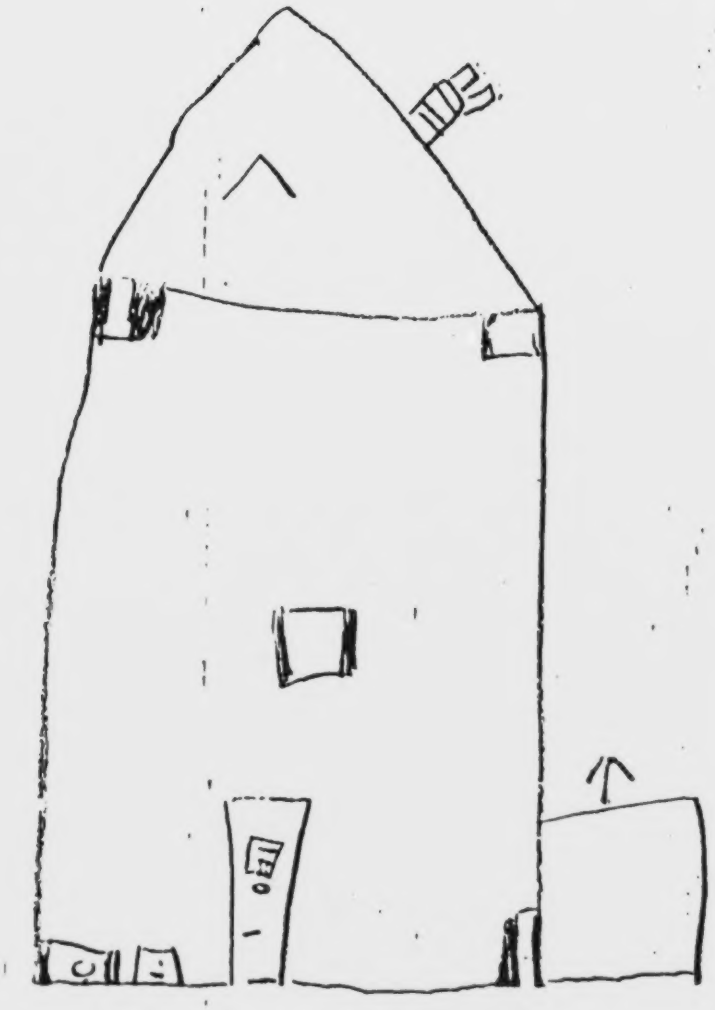
Not Yet Attained NYA

Not Present NP

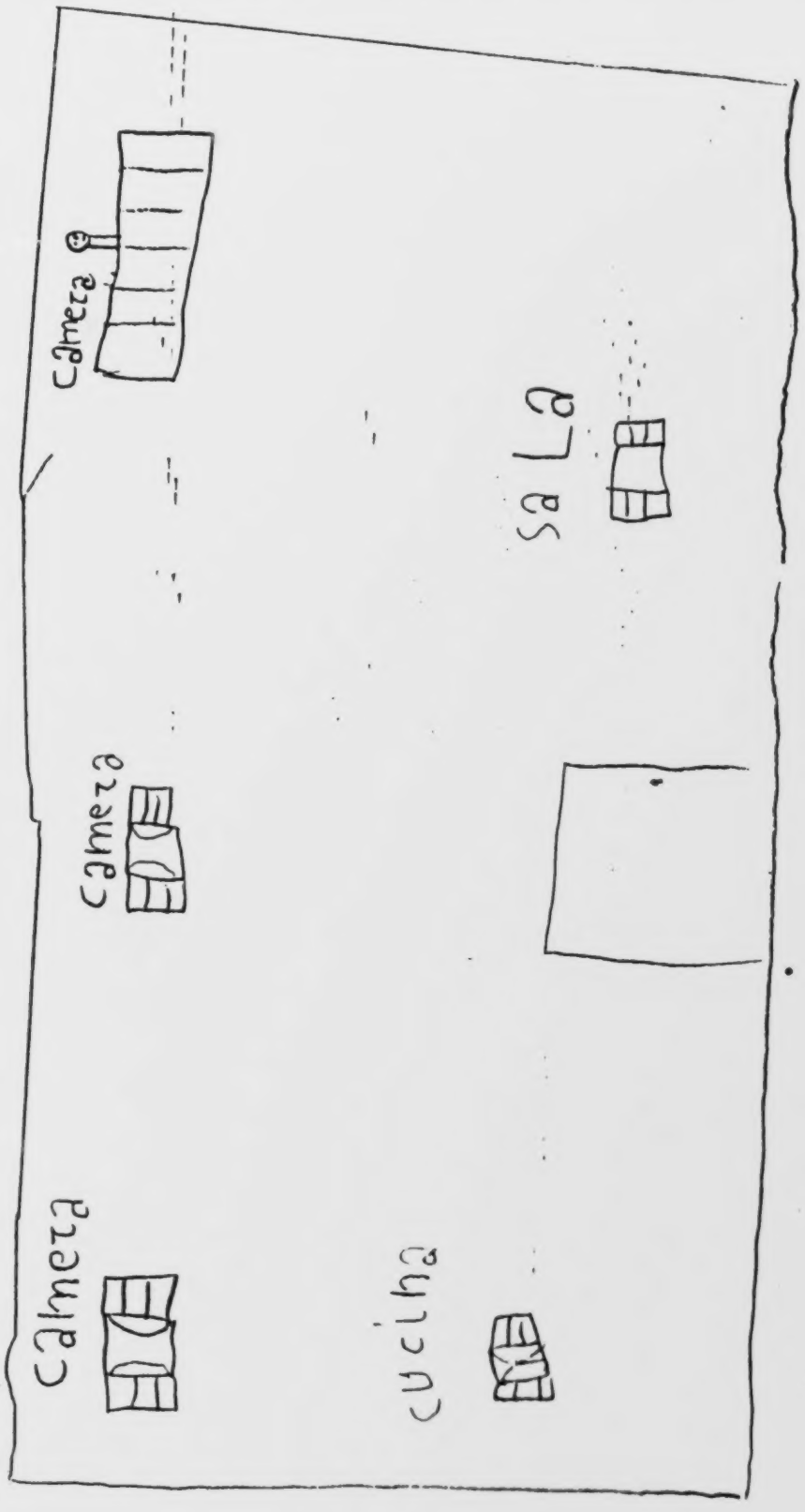
TABLE 5. Correlations of items order in the English standardisation sample, English small sample and Italian sample using Kendall' tau.

	τ
English large sample and Italian sample.	.827
Englisn small sample and Italian sample.	.849
English small sample and English large sample.	.952

Figure 1(a). A plan of his house drawn by an English boy aged 6 years 6 months.



Figeure 1(b). A plan of his house drawn by an Italian boy aged 6 yars 7 months.



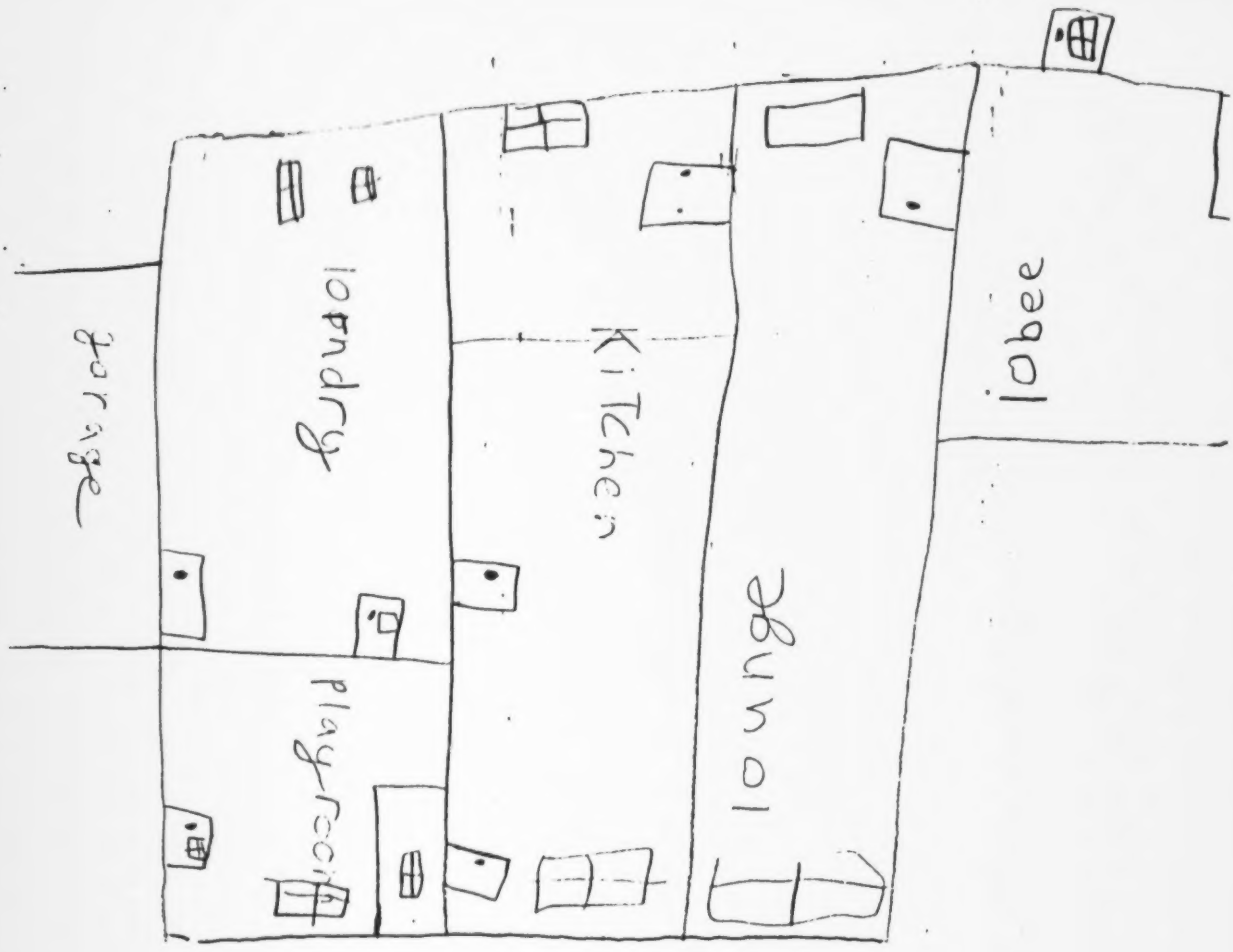


Figure 2(a). Aplan of his house drawn by an English boy aged 7 years 10 months.

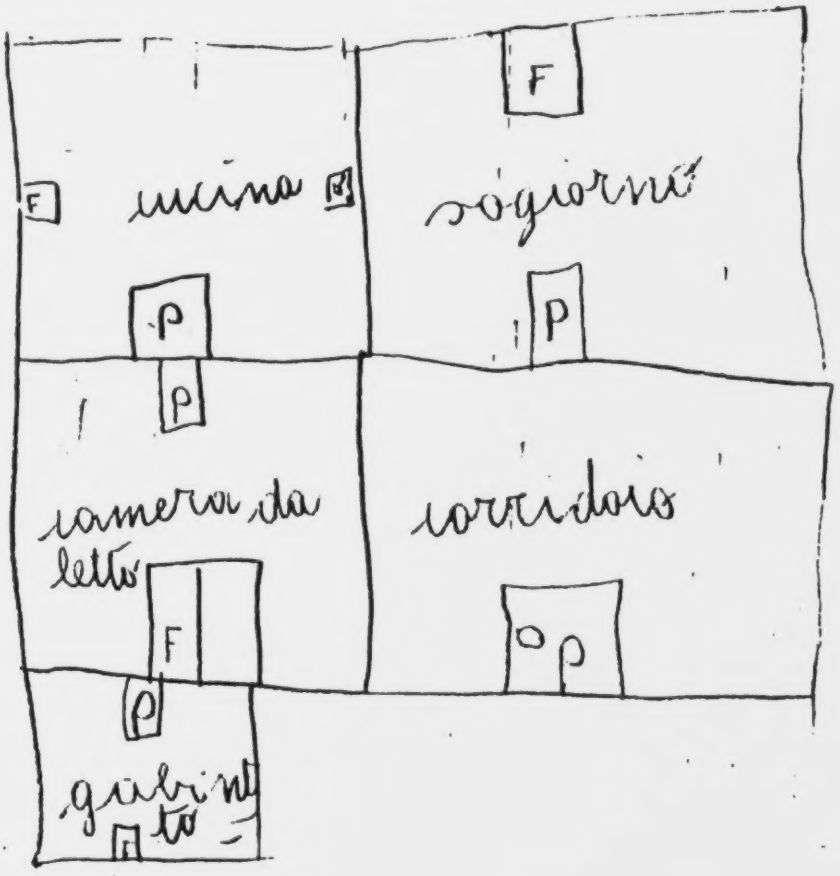


Figure 2(b). A plan of his house drawn by an Italian boy aged 8 years 2 months.

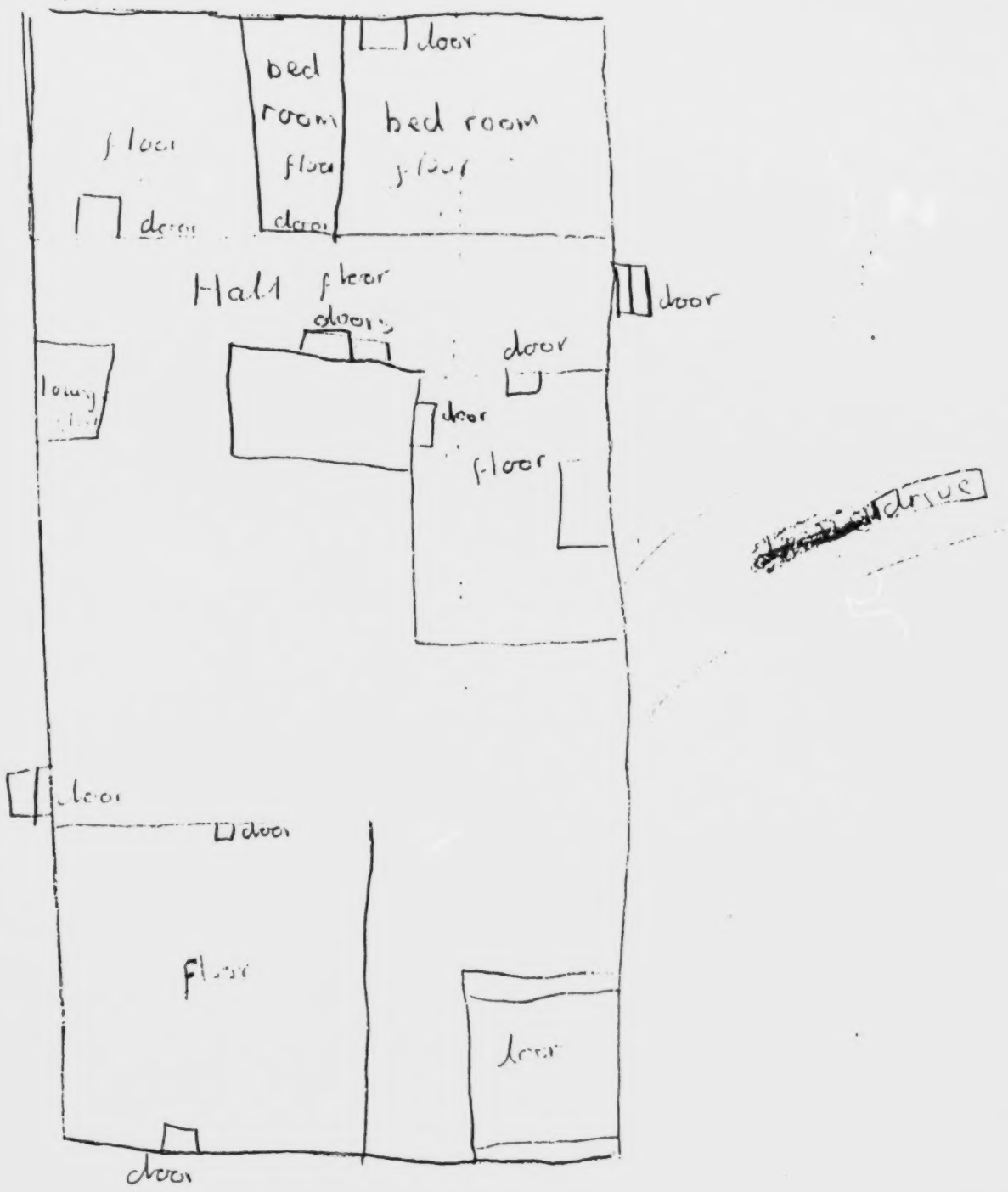


Figure 5(a). A plan of his house drawn by an English boy aged 9 years 6 months.

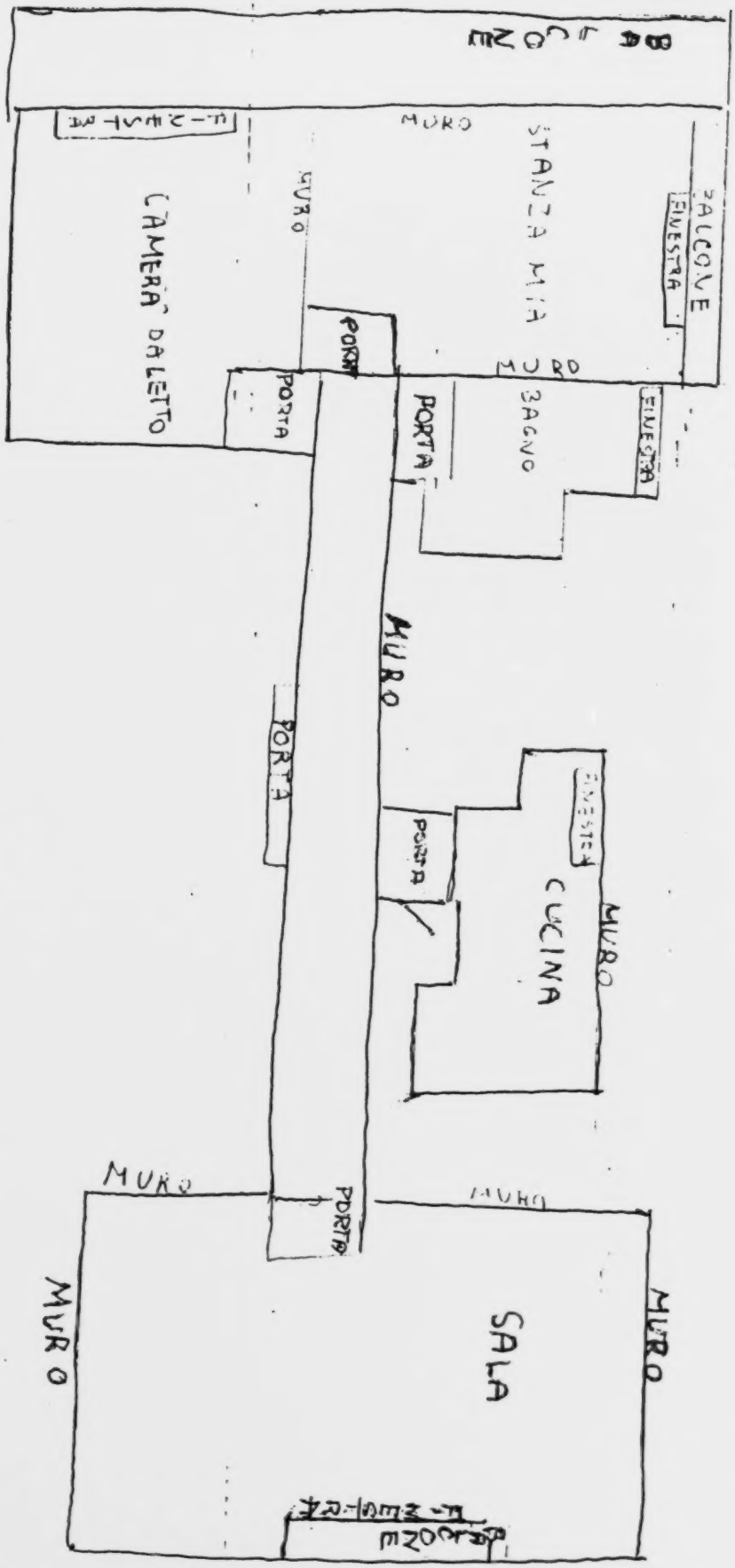


Figure 3(b). A plan of his house drawn by an Italian boy aged 10 years 2 months.

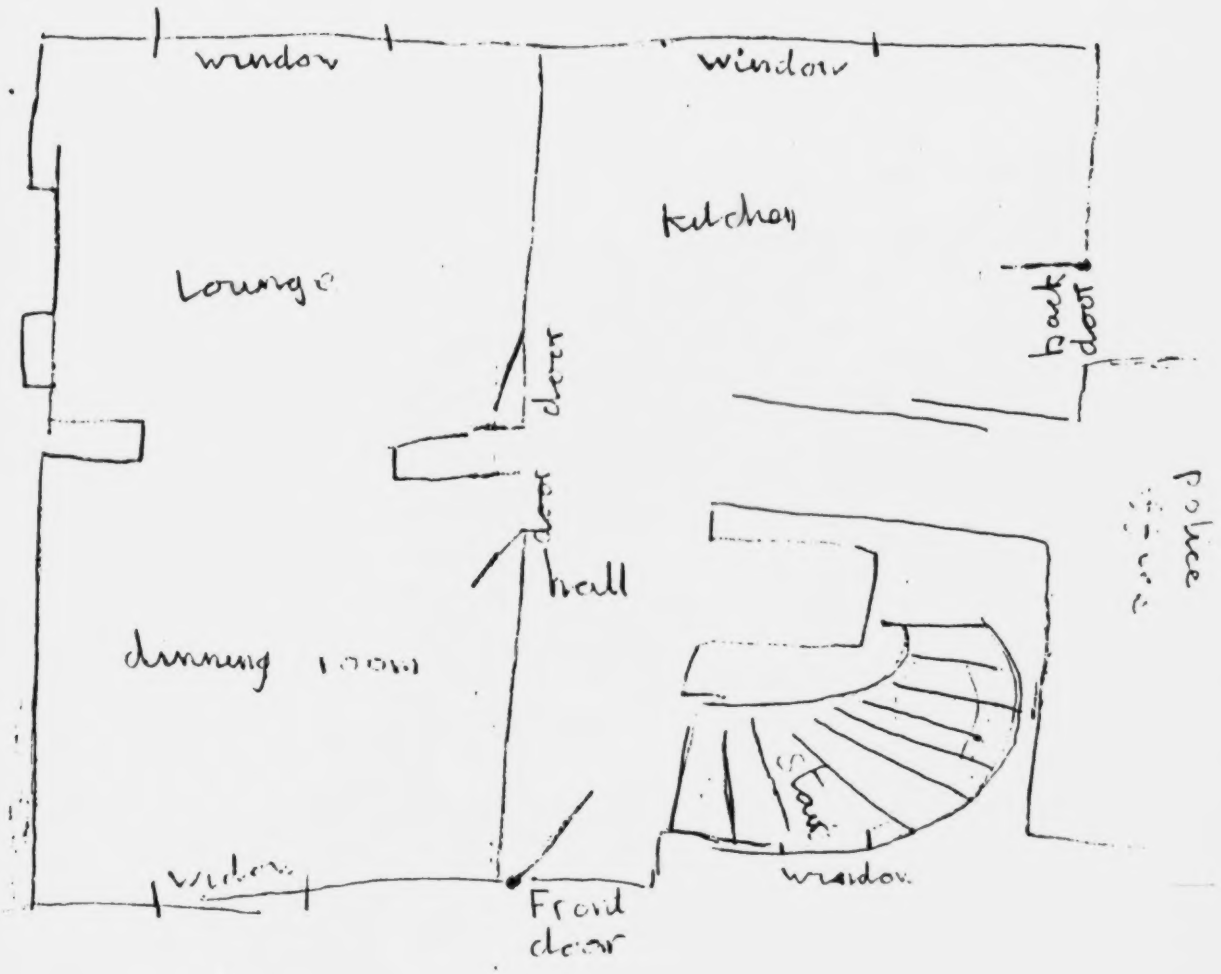


Figure 4(a). A plan of his house drawn by an English boy aged 10 years 7 months.

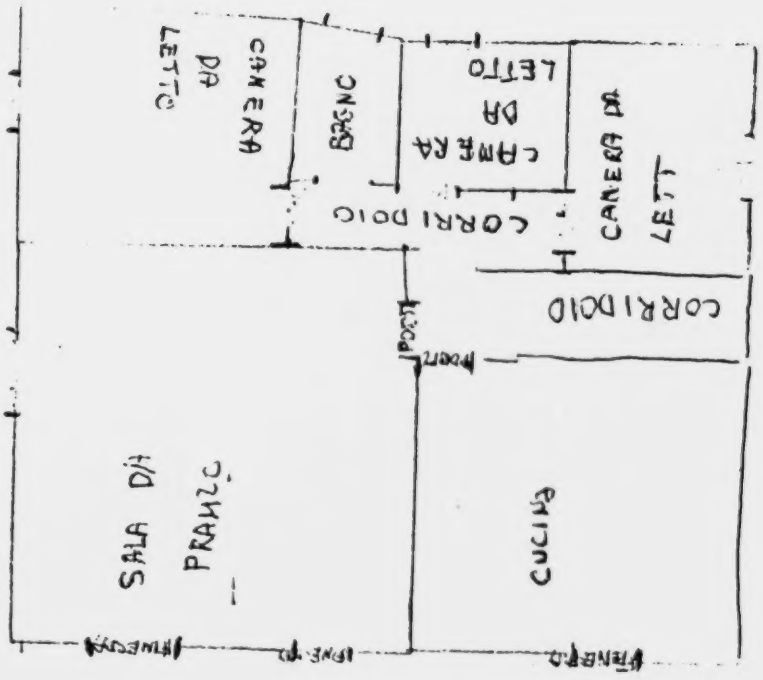


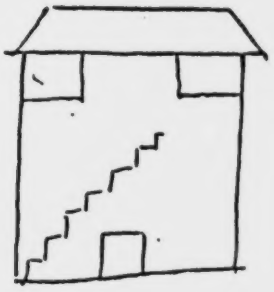
Figure 1(b). A plan of his house drawn by an Italian boy aged 10 years 10 months.

FOURTH AND FINAL SCORING SYSTEM

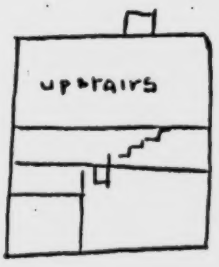
Items 1-7 apply to all plans. Items 8-40 apply only to horizontal plans.

1. ROOF ABSENT

No Credit

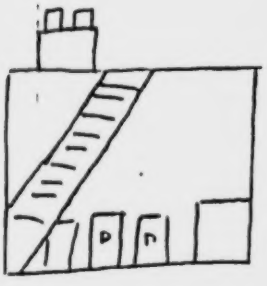


Credit

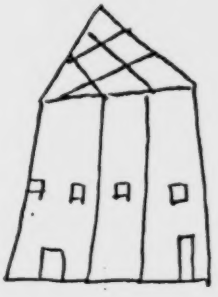


2. CHIMNEY ABSENT

No Credit

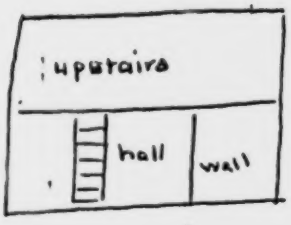


Credit

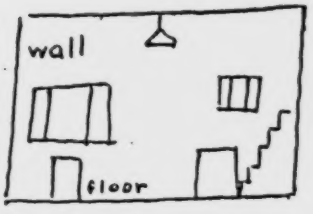


3. UPSTAIRS ABSENT

No Credit

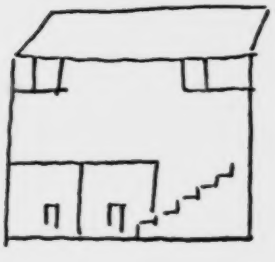


Credit



4. PLANE OF OUTSIDE WALL ABSENT

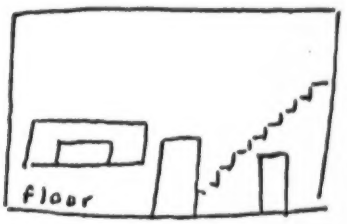
No Credit



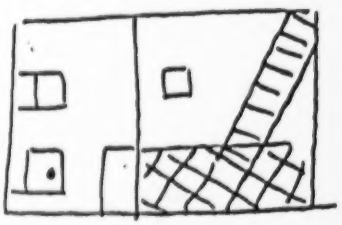
Credit

5. FLOOR — Floor marked by word or self evident

Credit



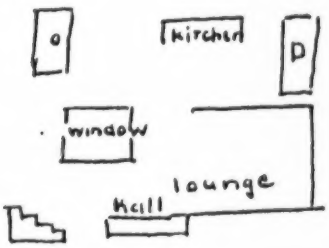
Credit



6. DEPTH — Depth indicated. May or may not have outer wall.

No credit

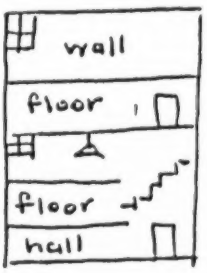
Credit



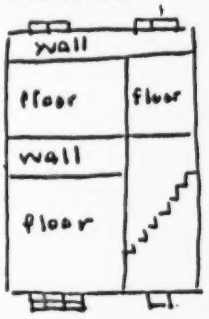
Credit

7. HORIZONTAL STRUCTURE More than 50% of each room horizontal

Vertical



Horizontal

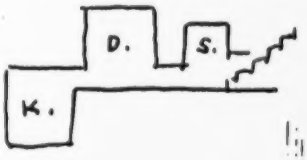


NOTE: Only proceed if this item is correct.

8. CONNECTEDNESS — All rooms connected in some way, even if by vertical walls and doors.

No Credit

Credit



NOTE: If Item 8 is incorrect do not consider any other items except 16, 20, 22, 24, 25, 26, 27, 28, 30, 31, 32 and 34.

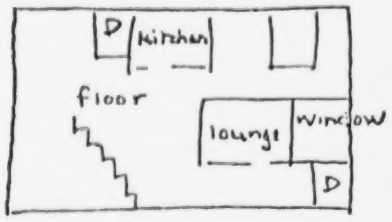
9. COMMONALITY — All walls of rooms and hall common.

No Credit

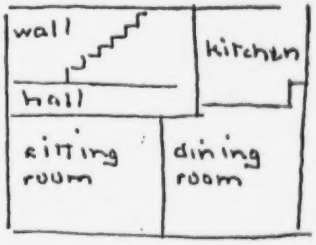
Credit

10. OUTER WALL I — At least three quarters of outer wall common with internal rooms. Only walls drawn as cross-sections included.

No Credit

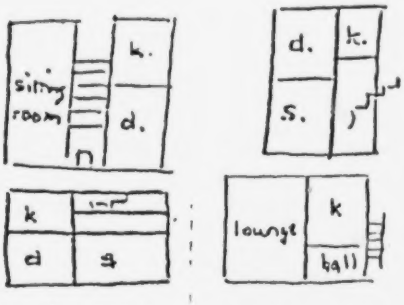


Credit

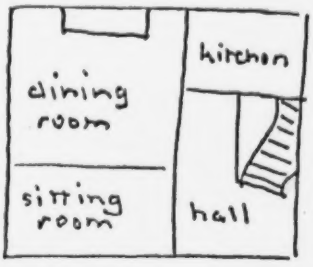


11. OUTER WALL II — Completely correct. Do not credit if there is a break in the wall by the stairs, or if stairs are drawn outside wall.

No Credit

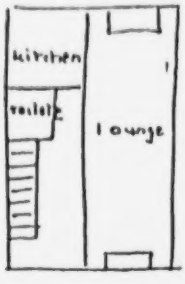


Credit



12. ROOMS: PROPORTIONS — No room should have the length greater than twice the width, except a through room where length may be two and a half times width. The area of the kitchen should be less than the largest living room and greater than one sixth. The toilet, cloakroom or cupboard should not be greater than the area of half the kitchen. Only consider this item if the rooms are rectangular.

No Credit

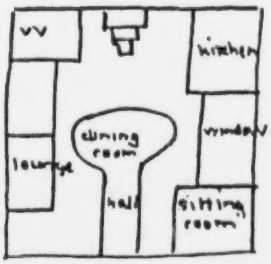


Credit

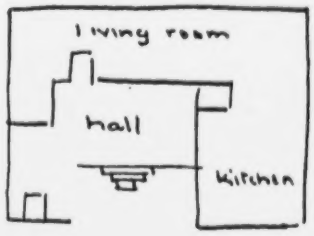
13. HALL I

At least three walls correct. The fourth may be incorrect owing to the stairs being vertical.

No Credit



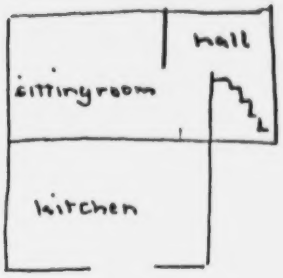
Credit



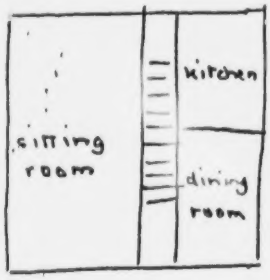
14. HALL II

Three walls correct and limits adjoining staircase correctly indicated.

No Credit



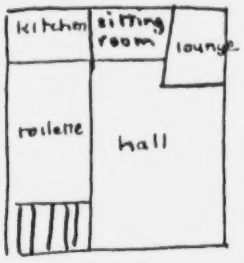
Credit



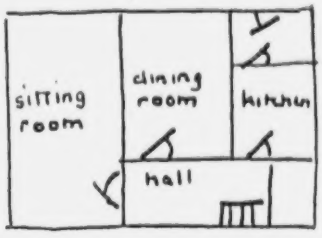
15. HALL : PROPORTIONS

The width should be less than half-width of largest room but greater than one sixth. Only consider if Item 14 is correct.

No Credit



Credit



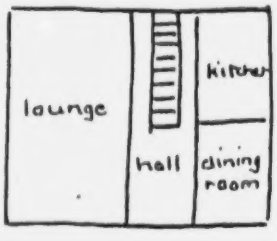
NOTE: If stairs are drawn vertically continue with Item 22.

16. HORIZONTAL STAIRS

The staircase is usually rectangular and always parallel or at right angles to a wall.

No Credit

Credit

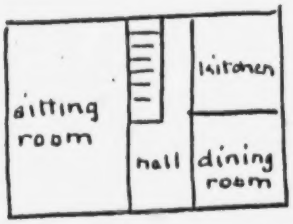


17. STAIRCASE I

The staircase is correctly integrated with the plan, with no vertical walls or unaccounted for spaces, but upper or lower limits may be incorrect.

No Credit

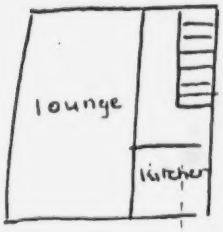
Credit



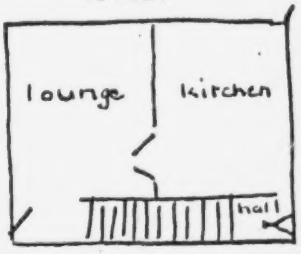
18. STAIRCASE II

Staircase completely correct, rectangular, integrated with plan and upper and lower limits correct.

No Credit



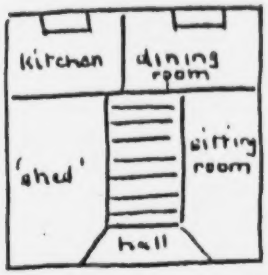
Credit



19. STAIRCASE : PROPORTION

Width of staircase should not be less than one sixth or greater than one third of width of largest room. Item 17 must be correct.

No Credit

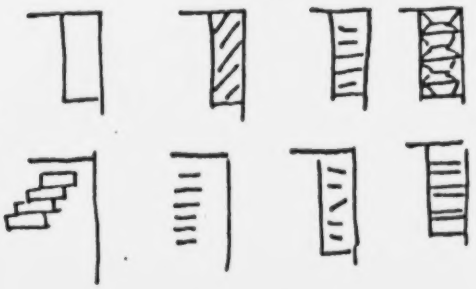


Credit

20. TREADS I

Treads drawn carefully with parallel lines. Only consider if Item 16 is correct.

No Credit



Credit

21. TREADS II

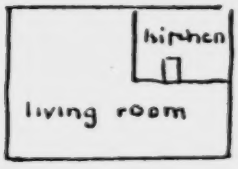
Treads almost or wholly correct; equal spacing, appropriate depth and less than 20.

Credit

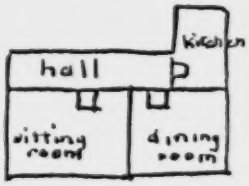
22. DOORS: NUMBER I

At least two or more doors, but incomplete because some rooms are without necessary access. Any representation acceptable.

No Credit



Credit



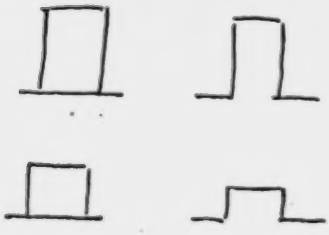
23. DOORS: NUMBER II

All doors present. No room without access together with a front and back door.

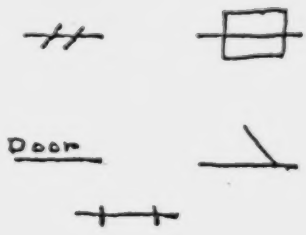
24. DOORS: TYPE I

Type of door is judged independently of the number of doors. A vertical picture is not acceptable.

No Credit



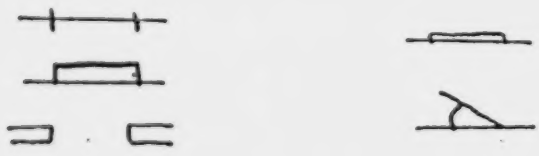
Credit



25. DOORS: TYPE II

Position and width of door or its frame indicated.

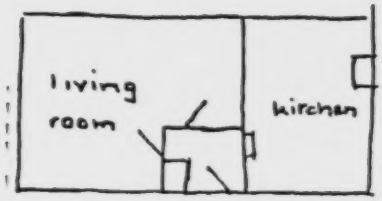
Credit



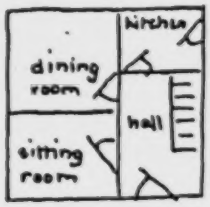
26. DOORS : TYPE III

All doors indicated as in architects' plans.

No credit



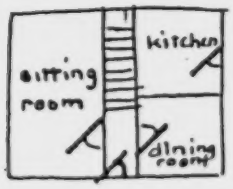
Credit



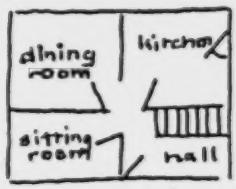
27. DOORS : PROPORTION

Width should not be more than one quarter of largest room, or less than one sixth of the width of the kitchen. Only consider if item 25 is correct and all doors are the same size.

No credit



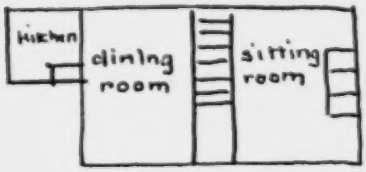
Credit



28. WINDOWS : NUMBER I

At least two or more windows present, but one or more rooms without windows. Any type of window acceptable. Window must be attached to outside wall.

No credit

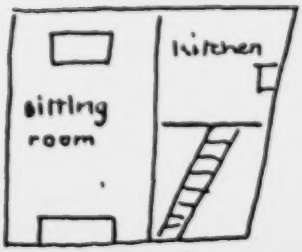


Credit

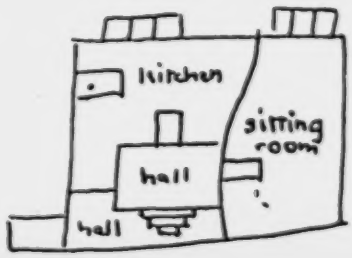
29. WINDOWS : NUMBER II

All windows present, any type accepted if attached to outside wall

No credit



Credit

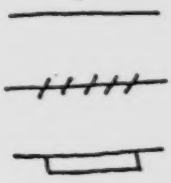


30. WINDOW : TYPE I

Type of window, judged independently of number of windows. Vertical picture not accepted.

No Credit

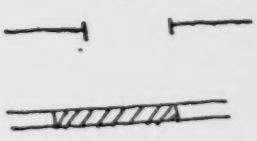
Credit

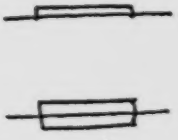


31. WINDOW : TYPE II

Width of window indicated

Credit

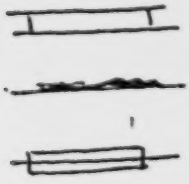




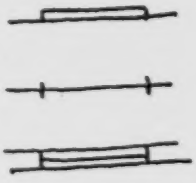
32. WINDOW : TYPE III

All windows indicated as in architects' plans and carefully drawn.

No Credit



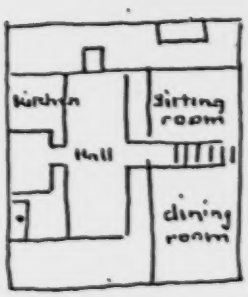
Credit



33. NO UNACCOUNTED FOR SPACE

Usually unaccounted for spaces occur where the walls are not common or when the staircase is incorrect.

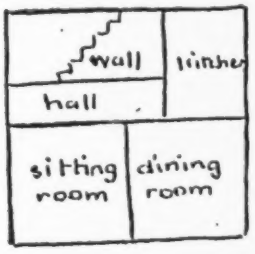
No Credit



Credit

34. NO VERTICAL WALLS — Vertical walls of rooms are sometimes seen and often associated with the stairs.

No Credit



Credit

NOTE: Look at Numbers 12, 15, 19 and 27 and score 35 to 38.

35. PROPORTIONS I — At least one correct proportion

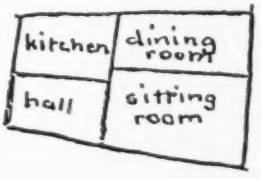
36. PROPORTIONS II — " " two " proportions

37. PROPORTIONS III — " " three " "

38. PROPORTIONS IV — " " four " "

39. QUALITY OF DRAWING I — At least half the lines are straight and two of the corners of the outer wall right angles.

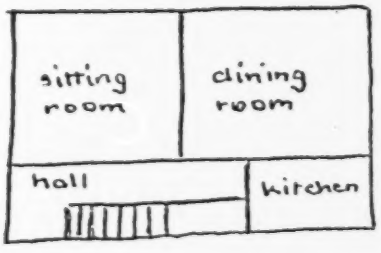
No Credit



Credit

40. QUALITY OF DRAWING II — All lines straight and parallel.

Credit

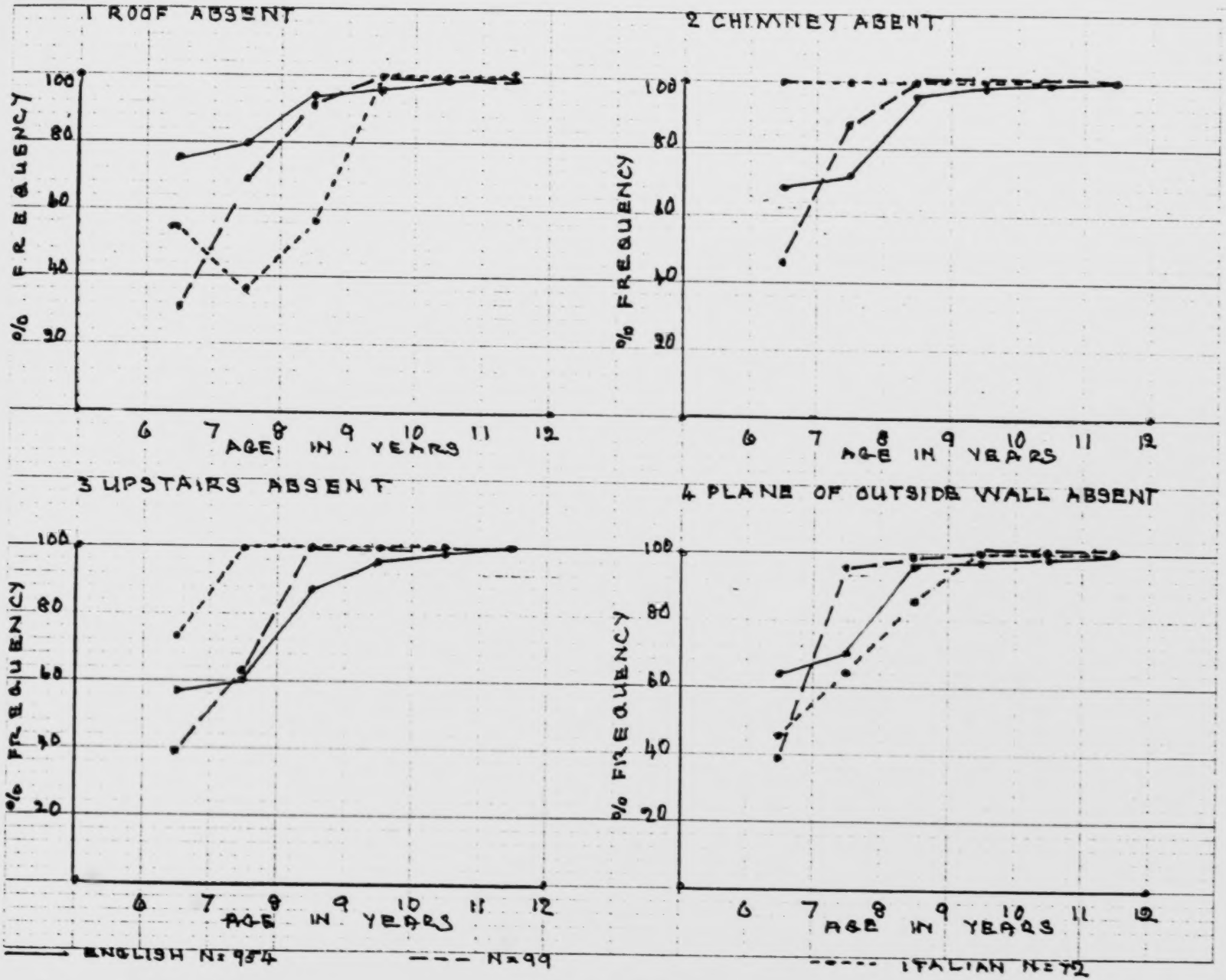


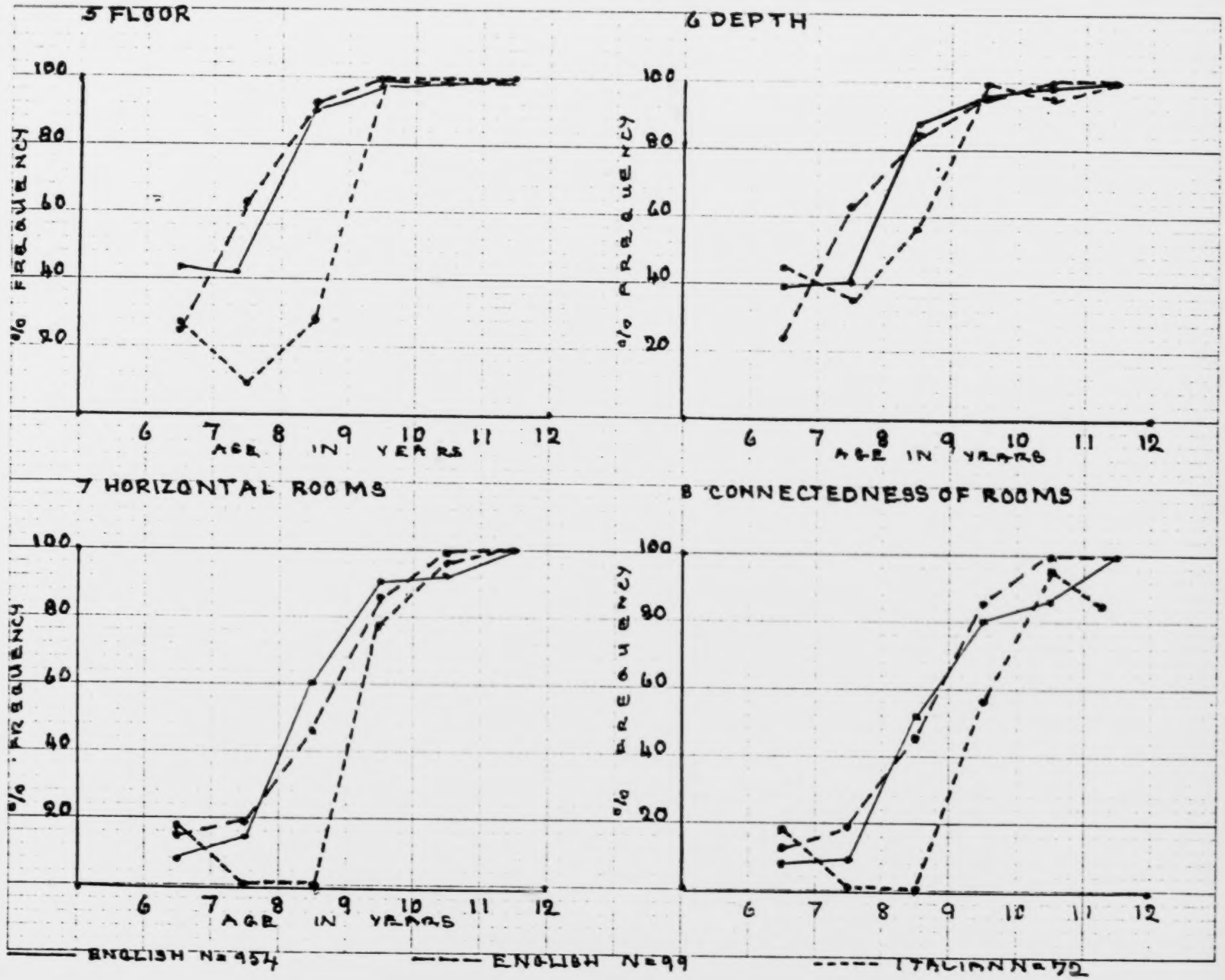
APPENDIX D

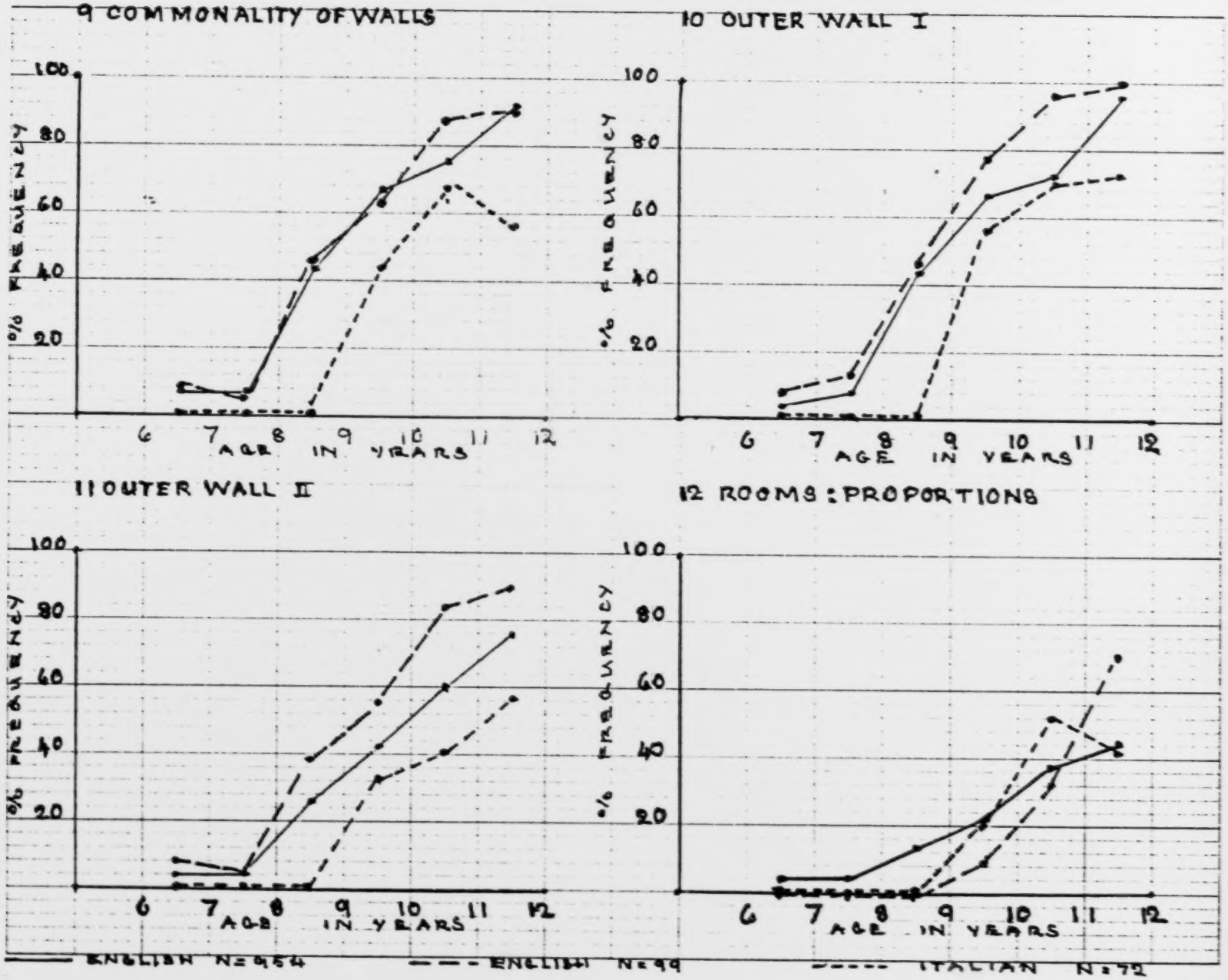
STANDARD SCORE EQUIVALENTS FOR RAW SCORES BASED ON TOTAL SAMPLE

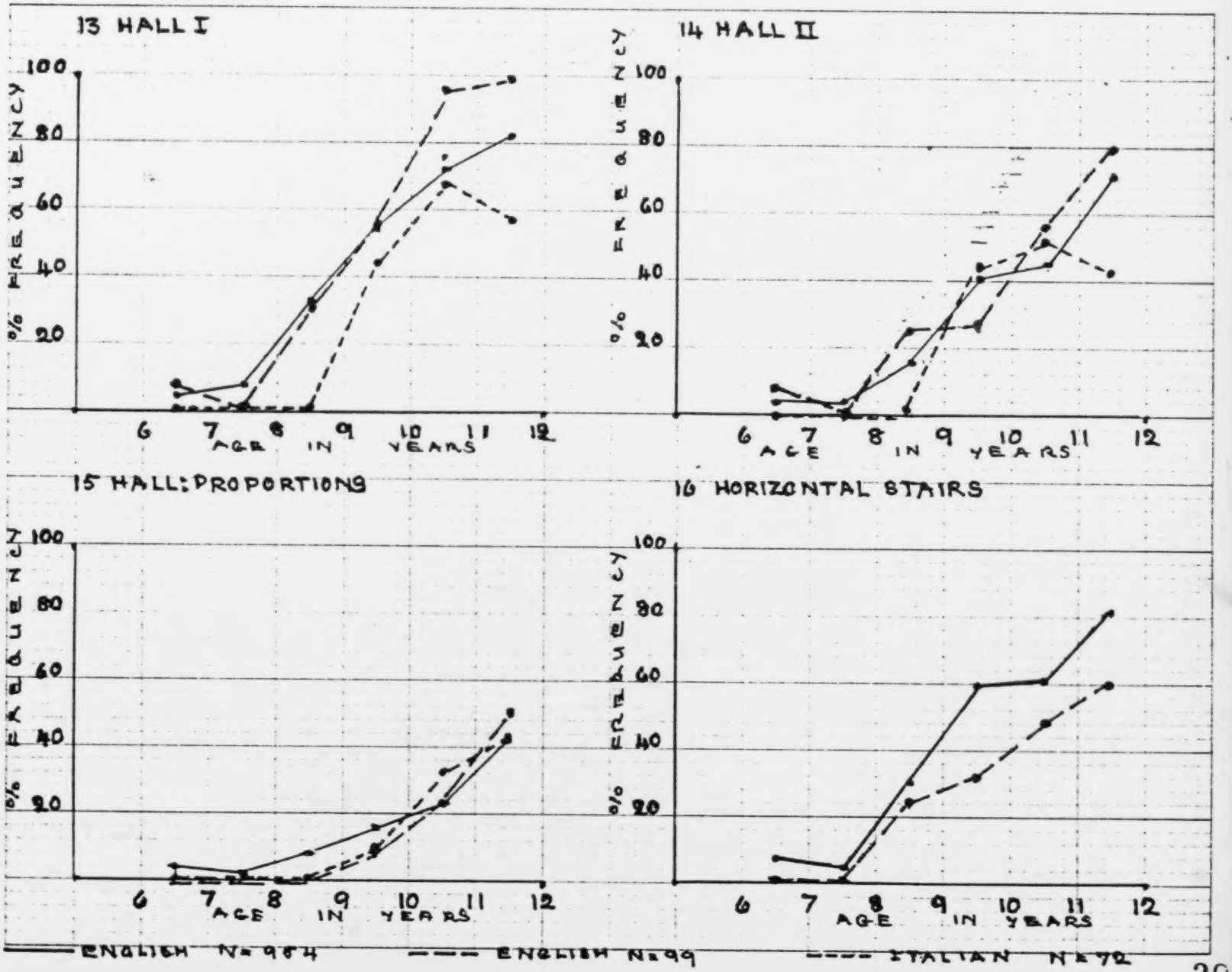
RAW SCORE	BOYS CHRONOLOGICAL AGE						
	7	8	9	10	11	12	13
40							125
39							121
38						125	117
37					125	120	113
36					123	117	110
35				125	120	114	107
34				121	117	110	104
33			125	119	115	108	101
32			122	116	112	104	99
31			119	114	110	101	96
30			116	112	107	98	94
29		125	113	109	104	95	93
28		123	110	108	101	93	91
27		121	108	105	98	90	89
26		119	106	104	96	88	87
25		117	103	102	94	86	86
24		115	101	100	92	84	84
23		114	99	98	90	83	82
22		113	98	96	88	82	81
21		111	96	95	86	81	80
20	124	110	94	93	85	80	79
19	124	109	93	92	83	78	77
18	124	108	91	91	81	77	75
17	123	106	90	89	79	76	
16	123	105	89	88	77	75	
15	122	104	88	87	75		
14	122	103	87	87			
13	121	102	87	84			
12	121	100	86	82			
11	120	99	85	81			
10	119	98	84	80			
9	118	97	83	78			
8	116	95	82	77			
7	113	93	80	76			
6	111	90	79	75			
5	107	87	78				
4	103	83	77				
3	98	80	75				
2	90	75					
1	81						
0	75						

RAW SCORE	GIRLS CHRONOLOGICAL AGE						
	7	8	9	10	11	12	13
40							
39							
38							125
37							121
36						125	118
35					125	121	115
34					122	117	112
33					119	115	108
32				125	116	113	105
31				121	114	110	102
30			125	119	113	108	99
29			122	117	110	106	96
28			120	115	108	103	94
27			119	113	106	102	92
26		125	117	112	104	100	90
25		123	115	110	102	98	88
24		122	114	109	100	96	86
23		121	113	108	98	94	85
22		120	111	106	96	93	83
21		118	110	105	95	90	82
20		117	109	104	93	89	81
19		116	107	102	91	87	80
18		115	106	100	89	86	79
17		114	105	99	88	84	78
16	125	112	103	97	86	82	77
15	124	111	101	95	85	80	77
14	124	109	99	93	83	79	76
13	123	108	97	92	81	77	75
12	122	106	96	90	79	76	75
11	121	105	94	88	77	75	
10	120	103	93	86	75		
9	118	101	91	84			
8	116	99	90	82			
7	113	96	87	80			
6	109	92	85	77			
5	104	88	82	75			
4	100	84	78				
3	94	79	75				
2	87	75					
1	81						
0							

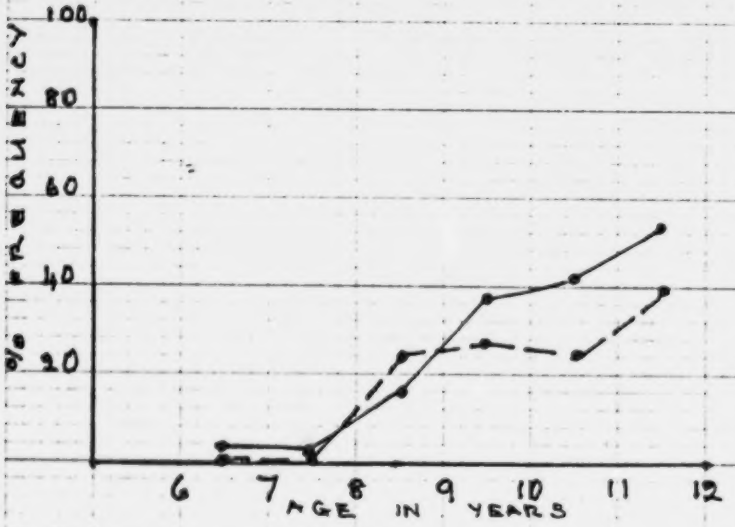

1 ROOF ABSENT
2 CHIMNEY ABSENT
3 UPSTAIRS ABSENT
4 PLANE OF OUTSIDE WALL ABSENT
% FREQUENCY
AGE IN YEARS
100
80
60
40
20
6
7
8
9
10
11
12
ENGLISH N=954
N=99
ITALIAN N=72


5 FLOOR
6 DEPTH
7 HORIZONTAL ROOMS
8 CONNECTEDNESS OF ROOMS
% FREQUENCY
AGE IN YEARS
ENGLISH N=454
ENGLISH N=99
ITALIAN N=72

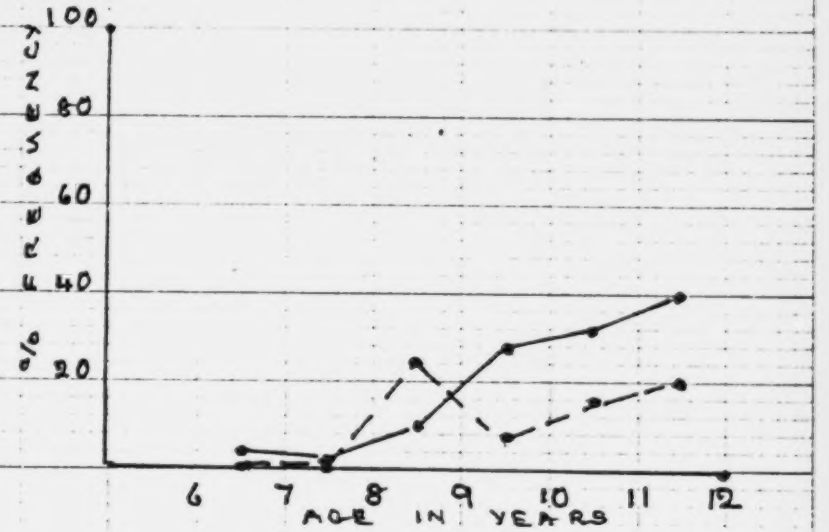

9 COMMONALITY OF WALLS
10 OUTER WALL I
11 OUTER WALL II
12 ROOMS : PROPORTIONS
% FREQUENCY
100
80
60
40
20
6
7
8
9
10
11
12
AGE IN YEARS
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72


13 HALL I
% FREQUENCY
100
80
60
40
20
6 7 8 9 10 11 12
AGE IN YEARS
14 HALL II
% FREQUENCY
100
80
60
40
20
6 7 8 9 10 11 12
AGE IN YEARS
15 HALL: PROPORTIONS
% FREQUENCY
100
80
60
40
20
6 7 8 9 10 11 12
AGE IN YEARS
16 HORIZONTAL STAIRS
% FREQUENCY
100
80
60
40
20
6 7 8 9 10 11 12
AGE IN YEARS
ENGLISH N=984
ENGLISH N=99
ITALIAN N=92

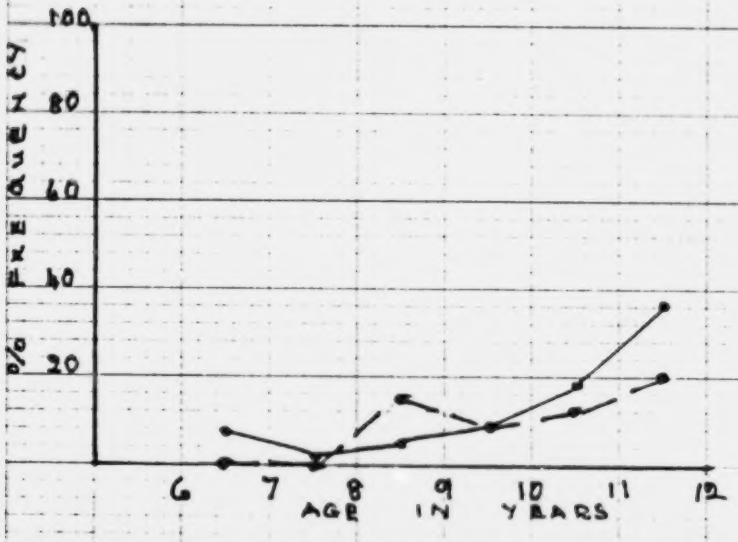
17 STAIRCASE I



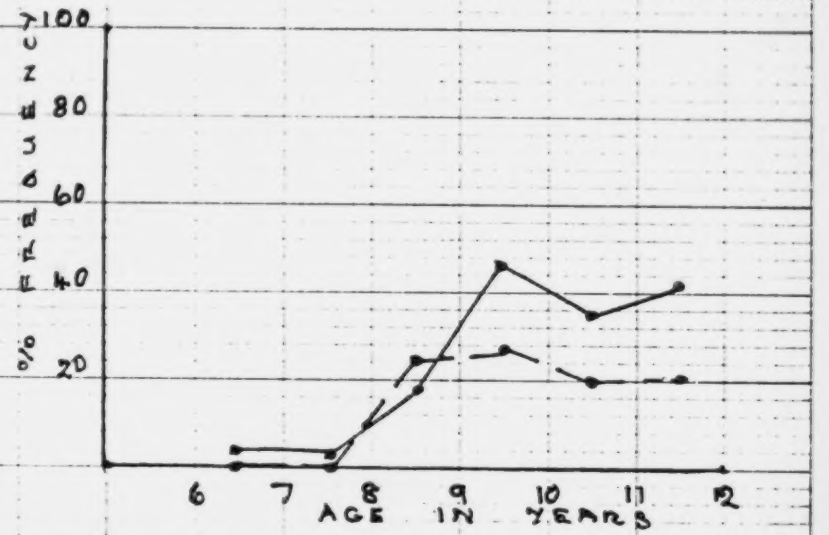
18 STAIRCASE II



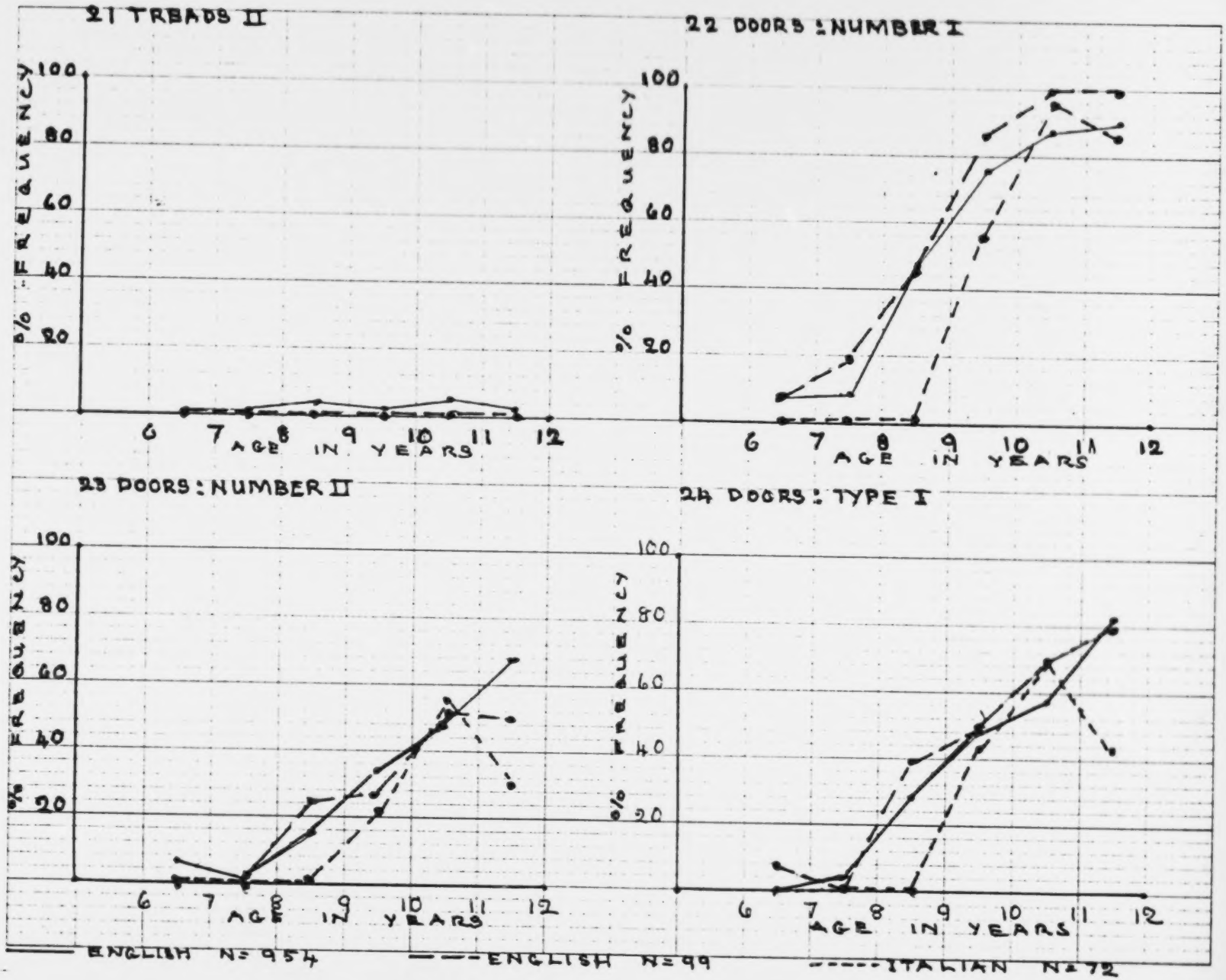
19 STAIRCASE: PROPORTION

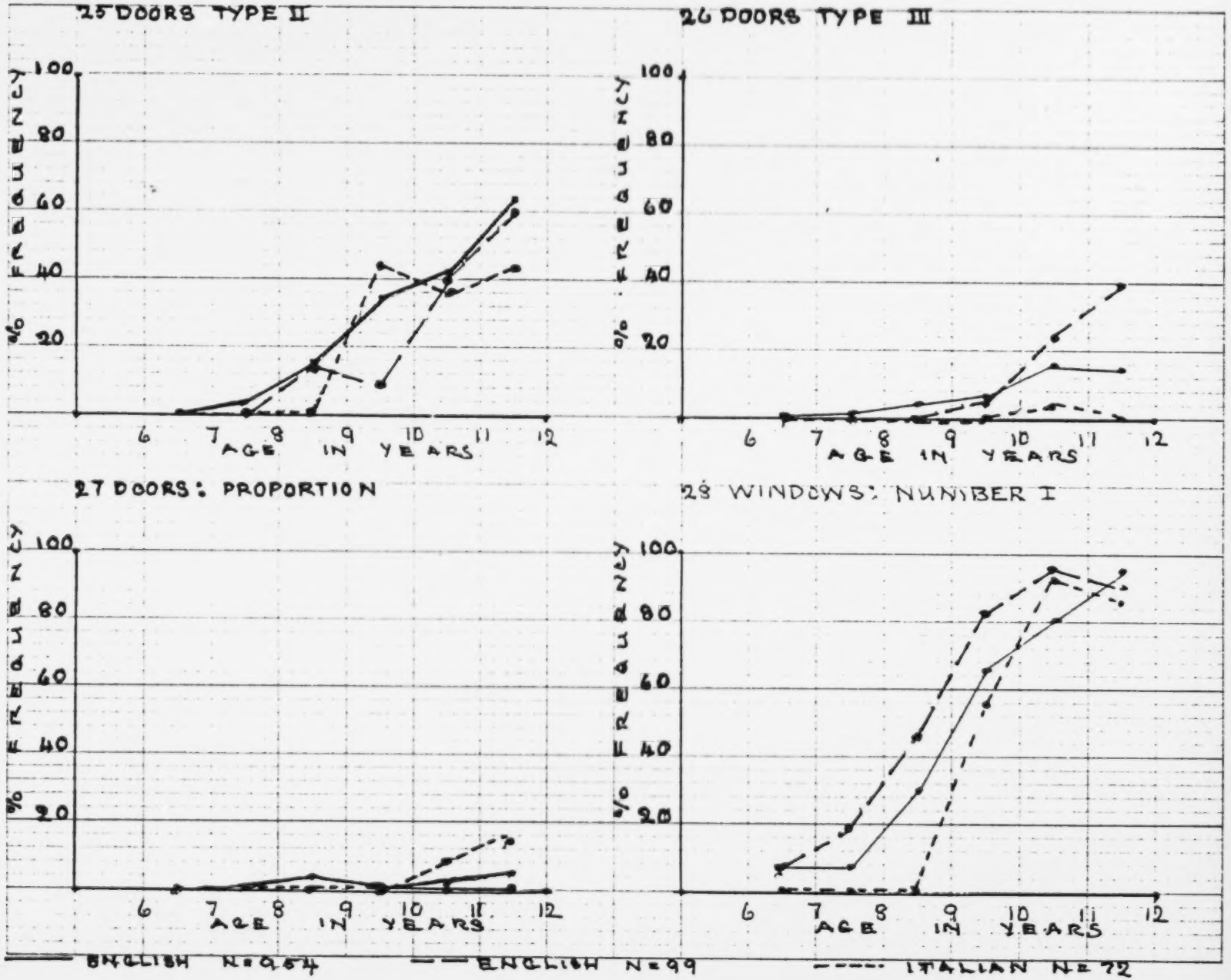


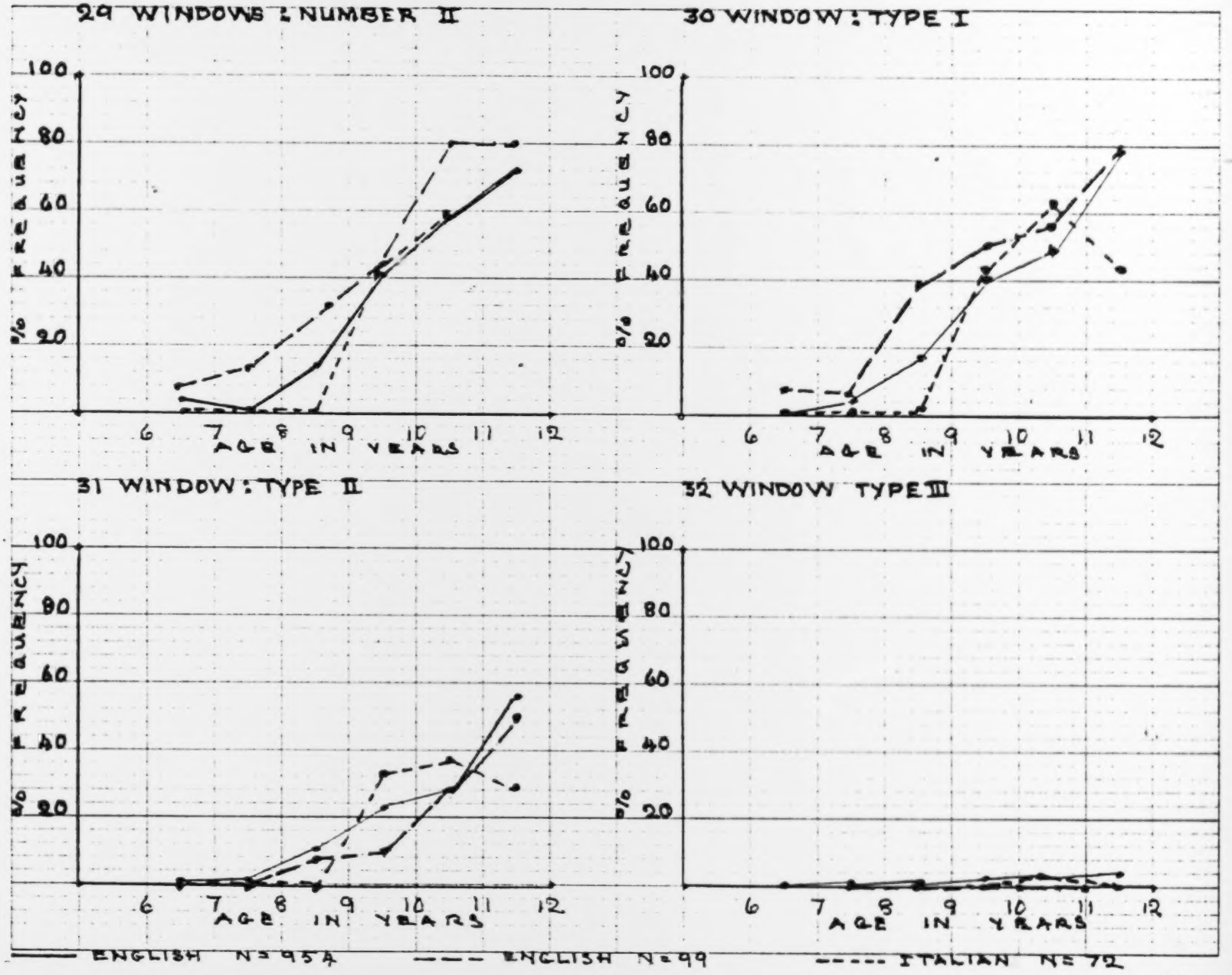
20 TREADS

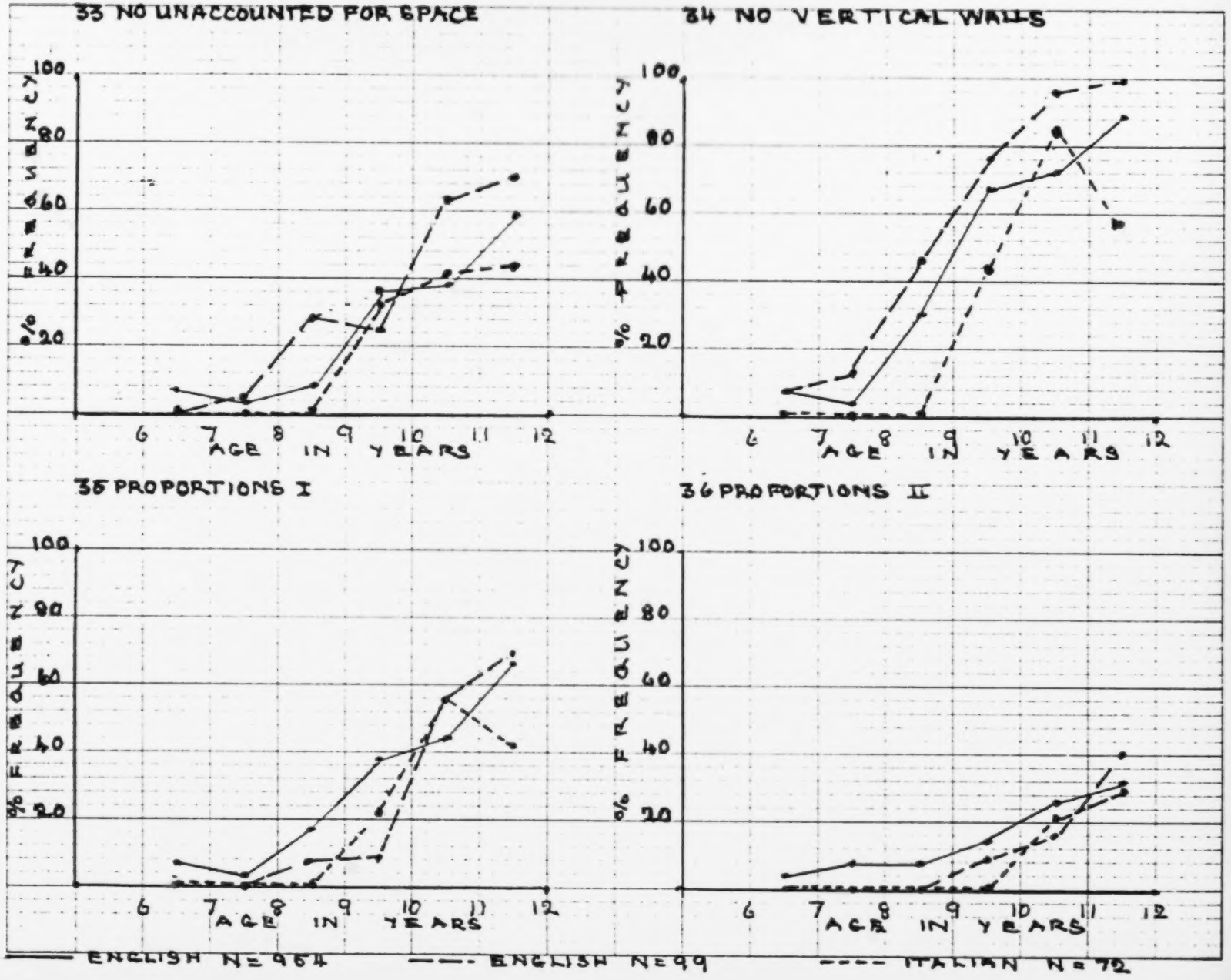


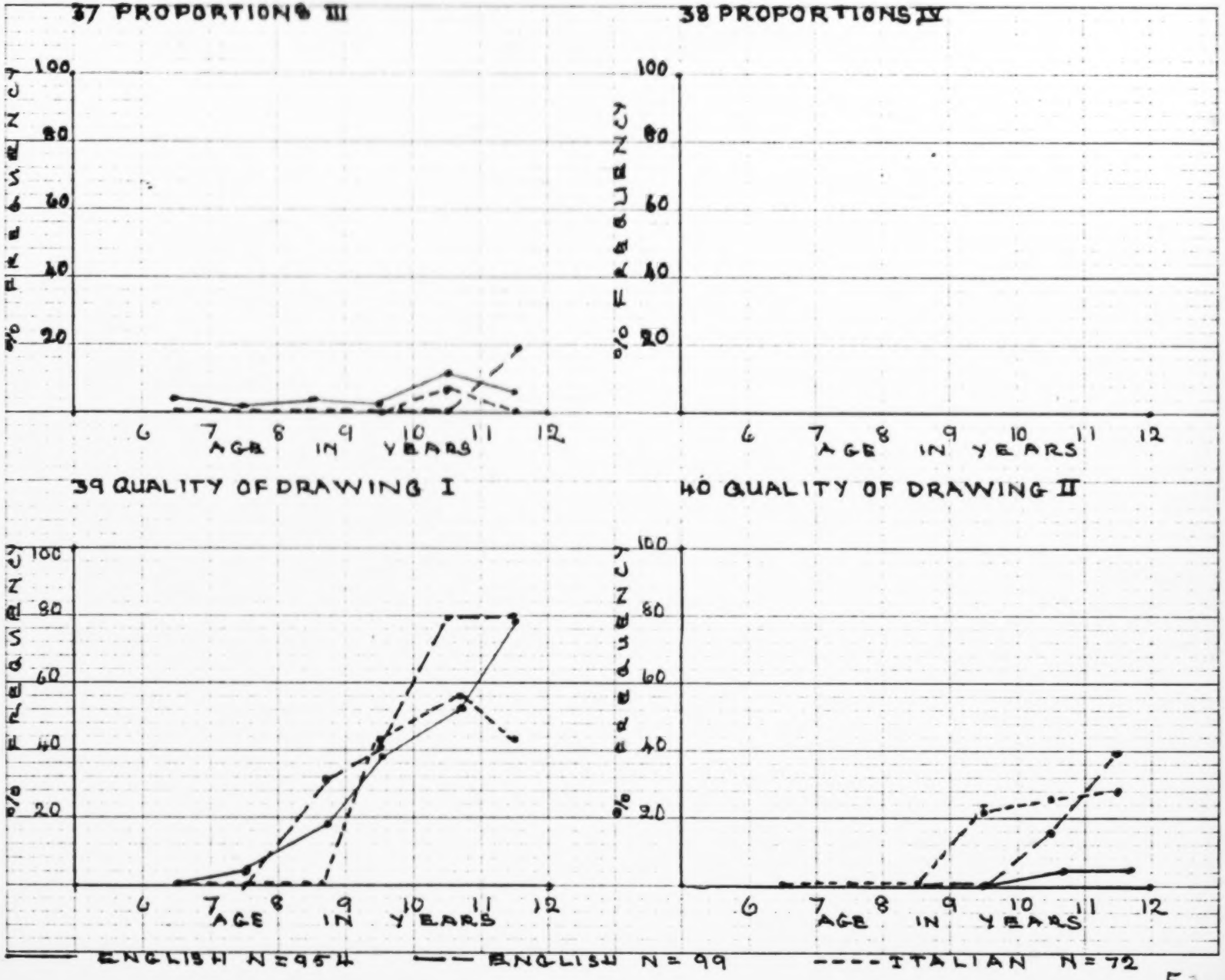
——— ENGLISH N=954 — — ENGLISH N=99 ---- ITALIAN N=72

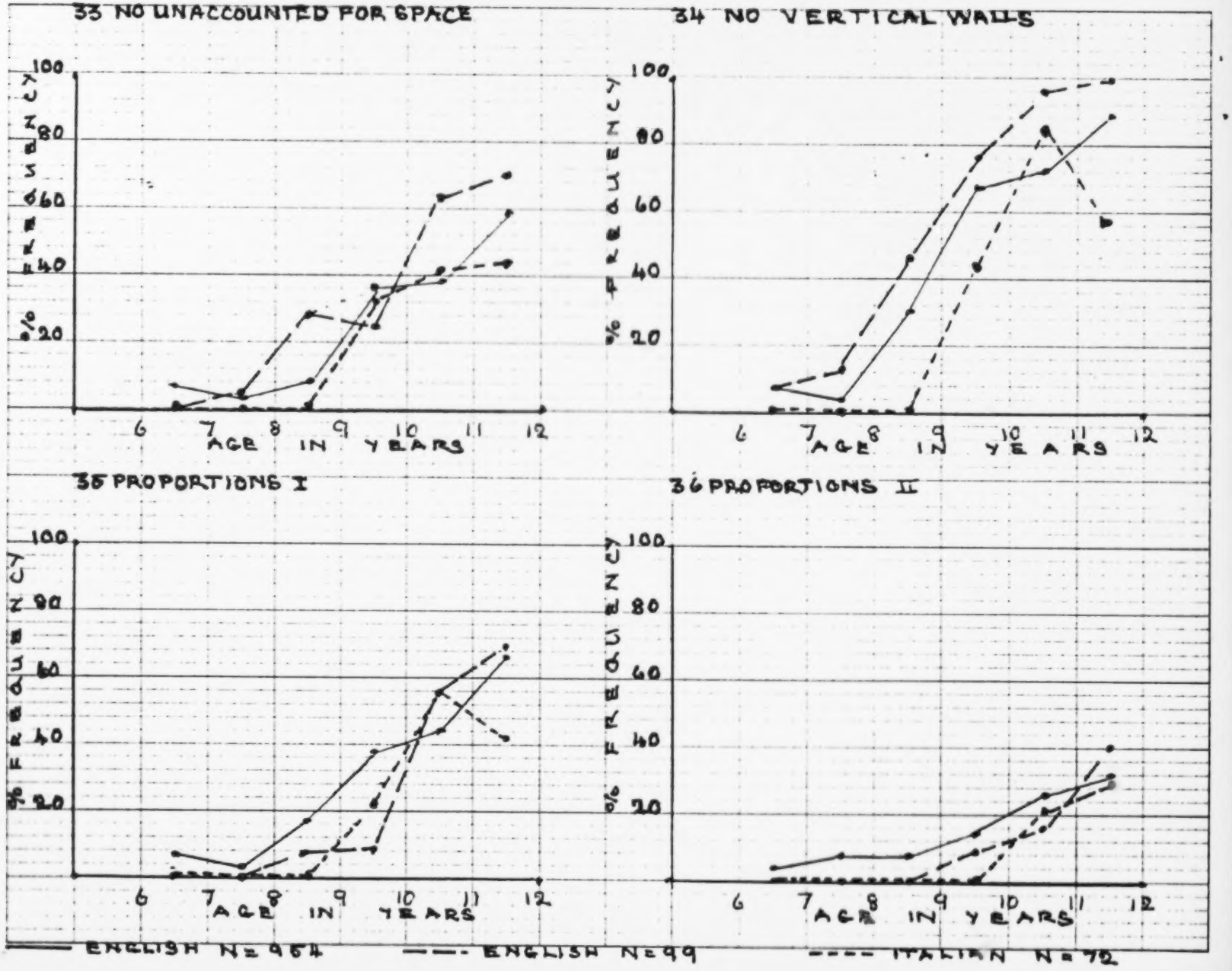

21 TRBADS II
22 DOORS : NUMBER I
23 DOORS : NUMBER II
24 DOORS : TYPE I
% FREQUENCY
AGE IN YEARS
6 7 8 9 10 11 12
20 40 60 80 100
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72


25 DOORS TYPE II
26 DOORS TYPE III
27 DOORS: PROPORTION
28 WINDOWS: NUMBER I
% FREQUENCY
100
80
60
40
20
6
7
8
9
10
11
12
AGE IN YEARS
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72


29 WINDOWS : NUMBER II
30 WINDOW : TYPE I
31 WINDOW : TYPE II
32 WINDOW TYPE III
% FREQUENCY
AGE IN YEARS
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72


33 NO UNACCOUNTED FOR SPACE
34 NO VERTICAL WALLS
35 PROPORTIONS I
36 PROPORTIONS II
% FREQUENCY
100
80
60
40
20
6
7
8
9
10
11
12
AGE IN YEARS
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72


37 PROPORTIONS III
38 PROPORTIONS IV
39 QUALITY OF DRAWING I
40 QUALITY OF DRAWING II
% FREQUENCY
100
80
60
40
20
6 7 8 9 10 11 12
AGE IN YEARS
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72


33 NO UNACCOUNTED FOR SPACE
34 NO VERTICAL WALLS
35 PROPORTIONS I
36 PROPORTIONS II
% FREQUENCY
100
80
60
40
20
6
7
8
9
10
11
12
AGE IN YEARS
ENGLISH N=954
ENGLISH N=99
ITALIAN N=72